

**Meeting of the Central Valley Flood Protection Board
August 26, 2010
Staff Report – Encroachment Permit
California Department of Transportation (Caltrans) – District 10
Duck Slough Bridge Crossings, Merced County**

1.0 – ITEM

Consider approval of Permit No. 18584 (Attachment B)

2.0 – APPLICANT

California Department of Transportation, District 10

3.0 – LOCATION

The project is located southeast of the City of Merced, along State Route 99 (SR99) in Merced County, and crosses over Duck Slough. (Duck Slough regulated stream, Merced County, see Attachment A)

4.0 – DESCRIPTION

Applicant proposes to construct three new bridges - north and southbound bridges (60-foot-wide x 88-feet-long) will each be supported by 15 concrete piles (16-inch-diameter), and a frontage road bridge (40-feet-wide x 82-feet-long) which will be supported by 10 concrete piles (16-inch-diameter); and remove a portion of the existing bridge (82-feet-wide x 76-feet-long) across the channel of Duck Slough.

5.0 – PROJECT ANALYSIS

The project described in Section 4.0, above, will require the removal of the existing northbound bridge, and construction of 3 new bridges (new southbound, northbound, and east frontage road bridges) along new alignments, and the existing southbound bridge will remain to the west of the project (as the west frontage road). The proposed

project will convert 5.9-miles of 4-lane expressway to 6-lane freeway and allow SR99 to have an increased capacity in this area (see Attachment C).

5.1 – Hydraulic Analysis

The proposed project was analyzed using the one-dimensional HEC-RAS 3.1.3 model. The design storm used was the 50-year storm (3,000 cfs) and the base flood was the 100-year storm (3,600 cfs), which was used because this area is agricultural and not considered either an urban or urbanizing area. Velocities in this stretch of Duck Slough range from approximately 5 to 7-feet-per-second. The analysis utilized Manning's roughness coefficients of 0.035 for in-channel values (to reflect minor stream on plain with weeds and slightly vegetated slopes) and 0.05 for the floodplain areas.

The existing structure is a 76-foot long structure with 3 bents in the channel. The proposed project will leave a portion of the existing structure in-place, the three new structures will have 2 spans with a minimum length of 124.7-feet and only a single bent in the channel. All proposed structures will also have higher soffit elevations than the existing structures, thus reducing the existing hydraulic risk and increasing the freeboard.

Freeboard for all the bridges will be 2.6-feet, which meets the Title 23 requirement, stating that minor streams must have a minimum of 2-feet of freeboard above the 100-year storm. Scour analysis determined that the flows, velocities, and configuration of the stream do not cause a high potential for scour and history shows no need for scour protection on the existing structures. Due to the proposed structures, the water surface elevation (WSE) is expected to increase slightly for a base flood condition in a localized area near the proposed eastside frontage road crossing. This maximum localized effect is expected to be 0.26-feet, and is being made up for in soffit elevation raise and is outweighed by the need for increased public safety that will occur by replacing structures built in 1914 and under-capacity with new structurally sound, hydraulically improved, and capacity improved structures. Therefore, after staff review, it has been determined that the hydraulic impacts for this project are negligible and freeboard requirements have been met and are in accordance with current standards. See Attachment D for Hydraulic Profile information.

5.2 – Geotechnical Analysis

Upon completion of staff review of the layout and foundations plans, test borings, and soil tests included in the Design Plans by Caltrans, staff is in agreement with the conclusion that this project does not bear any significant geotechnical impacts on the

regulated channel and all work to be completed will be done in a manner that does not pose a threat to the structural integrity of the structures, channel, or floodway. All earthwork and temporary structures shall be completed in compliance with Permit No. 18584 (Attachment B) and Title 23 Standards.

5.3 – Additional Staff Analysis

This project does not include (as reflected in Draft Permit No. 18584) any vegetative plantings within the floodway. This, however, does not preclude seeding any exposed slopes with native grasses for slope stability. Any vegetation to be planted within the floodway will require a separate permit.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- A 208.10 letter from the U.S. Army Corps of Engineers (USACE) is not required because the project is a regulated stream with no project levee or other project flood control facilities at or near the site.

7.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA Findings:

The Board, acting as a responsible agency under CEQA, has independently reviewed the Environmental Assessment/Environmental Impact Report (EA/EIR, November, 2005), Environmental Assessment with Finding of No Significant Impact/Final Environmental Impact Report (EA/FONSI/FEIR, March 2006), Statement of Overriding Considerations, and the Notice of Determination (July 5, 2006, SCH No. 2003051094) for the Plainsburg/Arborleda Freeway Project prepared by the lead agency, Caltrans District 10. These documents, including project design, may be viewed or downloaded from the Central Valley Flood Protection Board website at <http://www.cvfpb.ca.gov/meetings/2010/8-26-2010agenda.cfm> under a link for this agenda item.

7.1 – Impacts that can be Mitigated

The following are the significant impacts and the mitigation measures to reduce them to less than significant:

- **Aesthetics and Visual Resources:** The project proponent will implement replacement plantings to mitigate for the possible loss of a large oak and large eucalyptus trees.
- **Land Use and Socioeconomics:** The project proponent will provide relocation assistance and real property acquisition policies to mitigate for the displacement of residences and businesses.
- **Hydrology and Water Quality:** Implement construction-related and permanent post-construction Best Management Practices. Additionally, Best Management Practices (BMPs), as described in the Storm Water Pollution Prevention Plan (SWPPP), will be implemented, as appropriate, to retain, treat, and dispose of storm water runoff.
- **Biological Resources:** The project proponent will participate in Waters of the United States compensation and construction monitoring for mitigate for impacts to the jurisdictional Waters of the United States. To mitigate for the impacts to species habitat, the project proponent will participate in special-status species habitat compensation, pre-construction surveys, pre-construction educational meetings, avoidance and minimization measures, and construction contract special provisions in accordance with the Biological Opinion issued by the U.S. Fish and Wildlife Service.
- **Air Quality:** Fugitive dust and emissions during construction will be controlled with best available measures so that the amount of such dust and emissions are reduced, as required by San Joaquin Valley Unified Air Pollution Control District's rules, ordinances, and regulations.
- **Cultural Resources:** Work shall be stopped in affected areas if cultural resources are discovered during project construction and appropriate measures will be implemented. The lead agency will consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist and/or paleontologist shall meet to determine the appropriate avoidance measures or other appropriate mitigation. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards and CEQA Guidelines, Section 15064.5. To mitigate for impacts to known archaeological site, the project proponent will fence environmentally sensitive areas and provide construction monitoring.

- Hazards and Hazardous Materials: To mitigate for known potential hazardous waste materials, the project proponent will dispose of the soil at a Class I landfill, clean-up site in accordance with Environmental Protection Agency regulations.

Based on its independent review of the EA/EIR, EA/FONSI/FEIR, Mitigation Monitoring Plan and the Notice of Determination, the Board finds that for each of the significant impacts described above, changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the EA/FONSI/FEIR. Moreover, such changes or alterations are within the responsibility and jurisdiction of another public agency, Caltrans District 10, and such changes have been adopted by that agency.

7.2– Significant Unavoidable Adverse Impacts of the Project

- The proposed project would be built primarily on farmland that surrounds the project area. 342 hectares (835.2 acres) of farmland of which 101.2 hectares (250 acres) would be acquired.
- The proposed project would cause an increase in noise to sensitive receptors. One receptor would experience a 15-decibel increase in noise.

The Board further finds that none of the significant unavoidable adverse impacts of the project are within the Board's jurisdiction. The Board also finds that the specific economic, legal, social, technological or other benefits of the project, as listed above, outweigh the unavoidable adverse environmental effects, which are thus considered to be "acceptable."

7.3 – Statement of Overriding Considerations

The Board has independently considered the significant and unavoidable environmental impacts of the proposed project. The Board has also considered the benefits of the project, including improving the safety and traffic operations of State Route 99. The proposed project would increase safety for the traveling public, correct roadway deficiencies, accommodate increased traffic demands (both present and future), and provide route continuity. By increasing State Route 99 from four lanes to six and limiting access to two new interchanges, this section of State Route 99 would see a decrease in congestion, a reduced number of accidents involving cross-median traffic and at-grade intersections, improved compatibility of truck and car traffic, and improved efficiency for emergency vehicles. The reduction of traffic congestion, improved traffic flow and circulation of State Route 99, and overall improvement to traffic safety provided by the project, outweighs the unavoidable impacts identified in the findings. The Board finds

that economic, legal, social, technological, or other benefits of the proposed project outweigh the unavoidable adverse environmental effects of the project, and the adverse environmental effects are considered acceptable when these benefits of the project are considered.

The documents and other materials which constitute the record of the Central Valley Flood Board's proceedings in this matter are in the custody of Jay Punia, Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Rm. 151, Sacramento, California 95821.

8.0 – SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on the entire State Plan of Flood Control:

This project does not have significant impacts on the State Plan of Flood Control, as the project does not impair the structural or hydraulic functions of the system.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

Climate change issues have not been taken into account; however, it is assumed to be inland past the point tidal influence raises WSE. There are no other foreseeable projected future events that would impact this project.

9.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt the CEQA findings, approve Permit No. 18584 and direct staff to file a Notice of Determination with the State Clearinghouse.

10.0 – LIST OF ATTACHMENTS

- A. Location Maps and Photos
- B. Draft Permit No. 18584
- C. Plans and Typical Sections
- D. Hydraulic Profiles

Design Review:	Nancy C. Moricz, P.E.
Environmental Review:	Andrea Mauro, E.S. James Herota, E.S.
Document Review:	Dan S. Fua, P.E. – Supervising Engineer Len Marino, P.E. – Chief Engineer

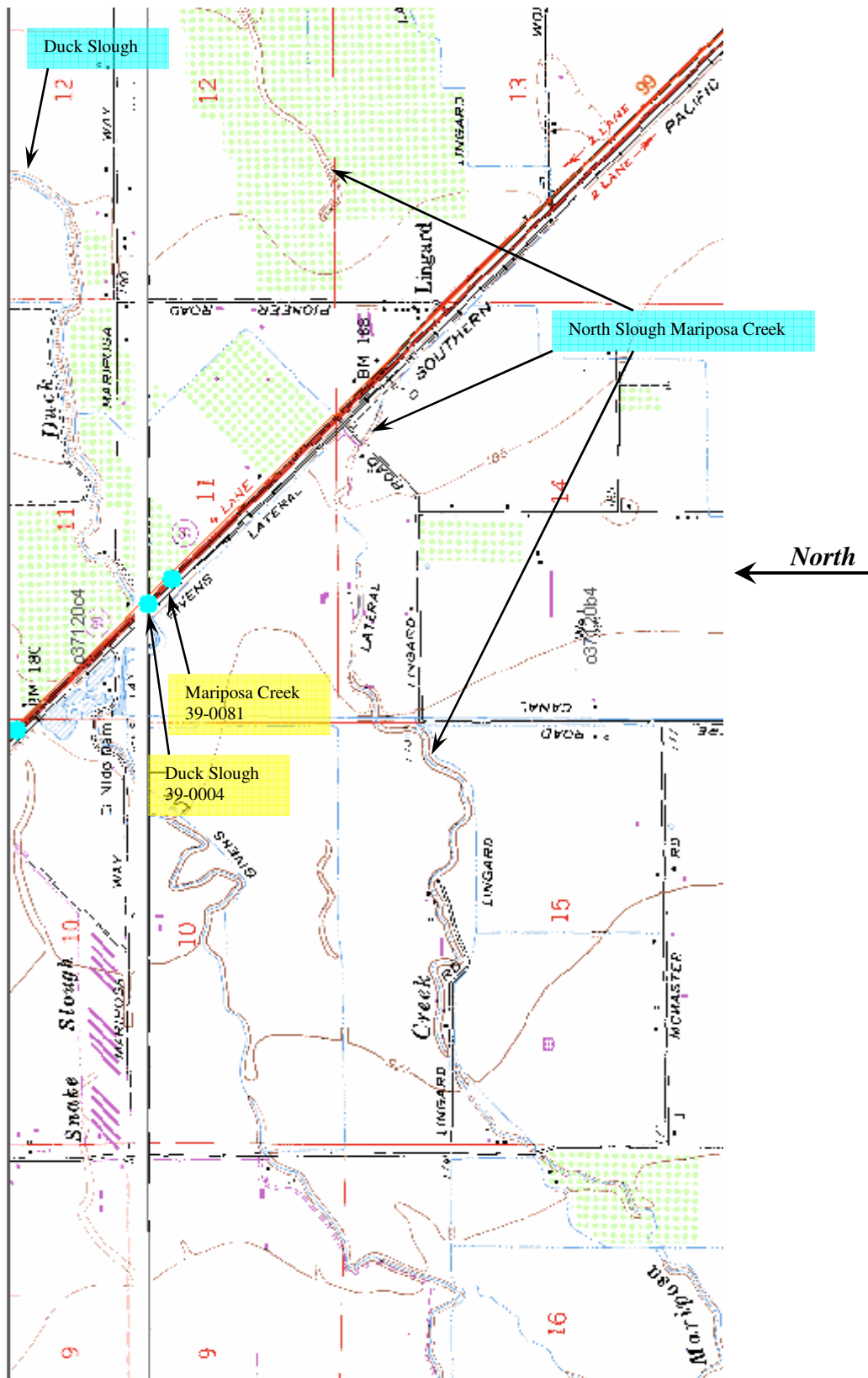


Figure 3: USGS Quad Map showing the relative locations of the Duck Slough and Mariposa Creek structures, along with the nearest reaches of Mariposa Creek, North Slough Mariposa Creek.

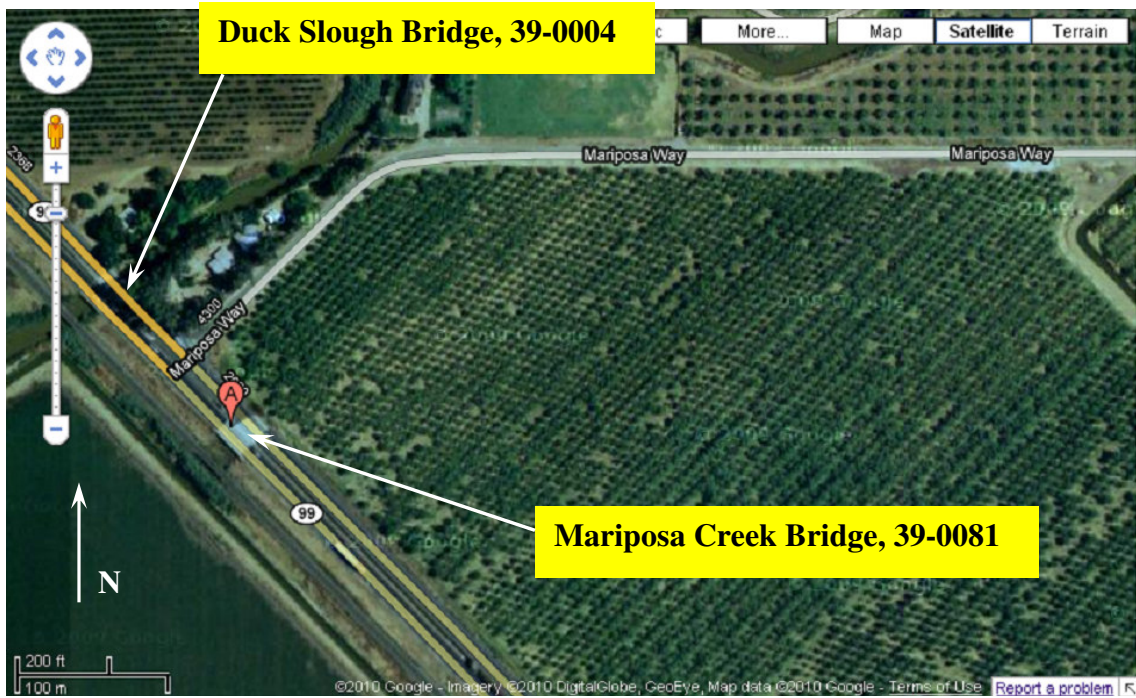


Figure 4: Aerial View. Note no defined stream upstream of Bridge Number 39-0081.



Figure 5: Mariposa Creek, 39-0081. Looking South at upstream edge of deck.



Figure 6: Mariposa Creek, 39-0081. Looking East at downstream edge of deck.

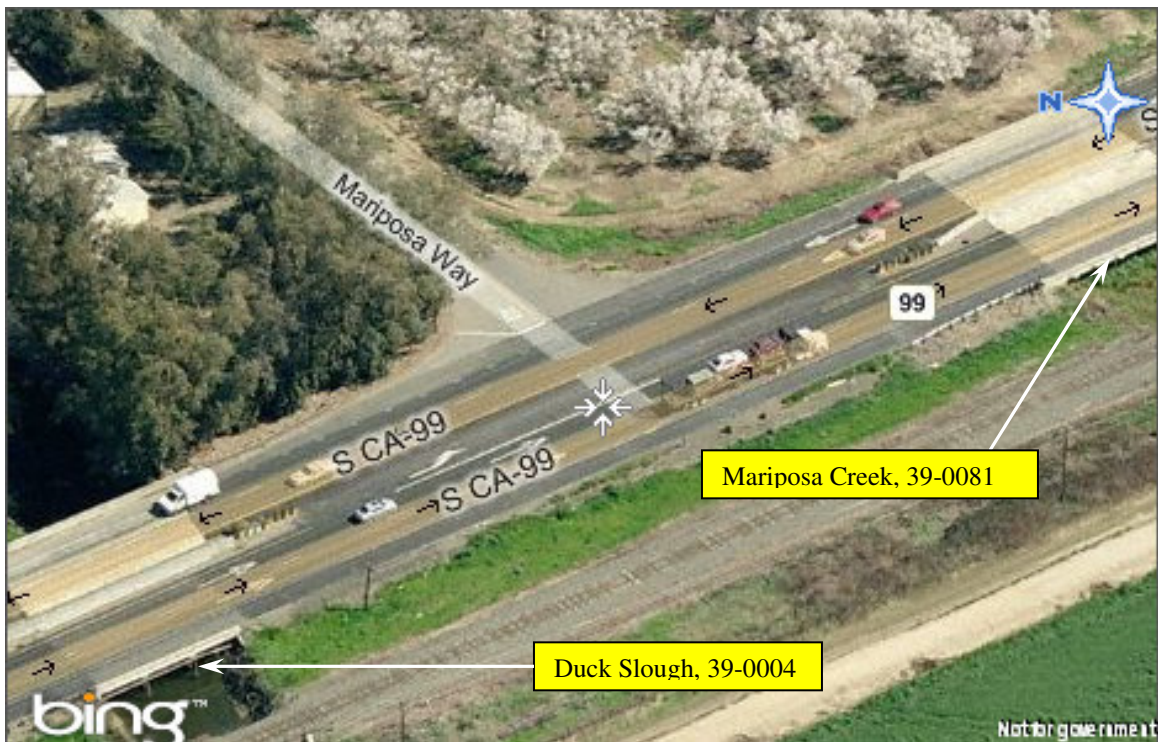


Figure 7: Looking East at the Duck Slough and Mariposa Creek structures.

Pictures of Duck Slough





East of Existing Bridge



DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18584 BD**This Permit is issued to:**

California Department of Transportation, District 10
2015 East Shields Avenue, Suite 100
Attention: David Farris
Fresno, California 93726

To construct three new bridges: north and southbound bridges (60-feet-wide x 88-feet-long) will each be supported by 15 concrete piles (16-inch-diameter), and a frontage road bridge (40-feet-wide x 82-feet-long) which will be supported by 10 concrete piles (16-inch-diameter); and remove a portion of the existing bridge (82-feet-wide x 76-feet-long) across the channel of Duck Slough. The project is located southeast of Merced on Highway 99 in Merced County (Section 11, T8S, R14E, MDB&M, Duck Slough, Merced County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

Executive Officer**GENERAL CONDITIONS:**

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to

change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18584 BD

THIRTEEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Central Valley Flood Protection Board.

FOURTEEN: There shall be no plantings within the project area under this permit, except that of native grasses, which may be required for slope protection.

FIFTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion

SIXTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SEVENTEEN: The Central Valley Flood Protection Board and Department of Water Resources shall

not be held liable for damages to the permitted encroachment(s) resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

EIGHTEEN: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior approval of the Central Valley Flood Protection Board.

NINETEEN: Prior to start of any demolition and/or construction activities within the floodway, the applicant shall provide the Central Valley Flood Protection Board with two sets of layout plans for any and all temporary, in channel cofferdam(s), gravel work pad(s), work trestle(s), scaffolding, piles, and/or other appurtenances that are to remain in the floodway during the flood season from November 1 through April 15.

TWENTY: Debris that may accumulate on the permitted encroachment(s) and related facilities shall be cleared off and disposed of outside the floodway after each period of high water.

TWENTY-ONE: The permittee shall contact the Department of Water Resources by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

TWENTY-TWO: Temporary staging, formwork, stockpiled material, equipment, and temporary buildings shall not remain in the floodway during the flood season from November 1 to April 15.

TWENTY-THREE: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

TWENTY-FOUR: Fill material shall be placed only within the area indicated on the approved plans.

TWENTY-FIVE: Backfill material for excavations shall be placed in 4- to 6-inch layers and compacted to at least the density of the adjacent, firm, undisturbed material.

TWENTY-SIX: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the regulated channel.

TWENTY-SEVEN: The soffit of the bridge shall be no lower than that of the replaced bridge.

TWENTY-EIGHT: Revetment shall be uniformly placed and properly transitioned into the bank, levee slope, or adjacent revetment and in a manner which avoids segregation.

TWENTY-NINE: Revetment shall be quarry stone or cobbles and shall meet the following grading:

Quarry Stone

Stone Size	Percent Passing
15 inches;	100
8 inches;	80-95
6 inches;	45-80

4 inches;	15-45
2 inches;	0-15

THIRTY: The revetment shall not contain any reinforcing steel, floatable, or objectionable material. Asphalt or other petroleum-based products may not be used as fill or erosion protection on the levee section or within the floodway.

THIRTY-ONE: The recommended minimum thickness of revetment, measured perpendicular to the bank or levee slope, is 18 inches below the usual water surface and 12 inches above the usual water surface.

THIRTY-TWO: All debris generated by this project shall be disposed of outside the regulated channel.

THIRTY-THREE: The work area shall be restored to the condition that existed prior to start of work.

THIRTY-FOUR: The permittee shall submit as-built drawings to the Department of Water Resources' Flood Project Inspection Section upon completion of the project.

THIRTY-FIVE: If the project result(s) in an adverse hydraulic impact, the permittee shall provide appropriate mitigation measures, to be approved by the Central Valley Flood Protection Board, prior to implementation of mitigation measures.

THIRTY-SIX: In the event that levee or bank erosion injurious to the adopted plan of flood control occurs at or adjacent to the permitted encroachment(s), the permittee shall repair the eroded area and propose measures, to be approved by the Central Valley Flood Protection Board, to prevent further erosion.

THIRTY-SEVEN: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance.

THIRTY-EIGHT: The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

THIRTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

FORTY: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and

Department of Water Resources, at the permittee's or successor's cost and expense.

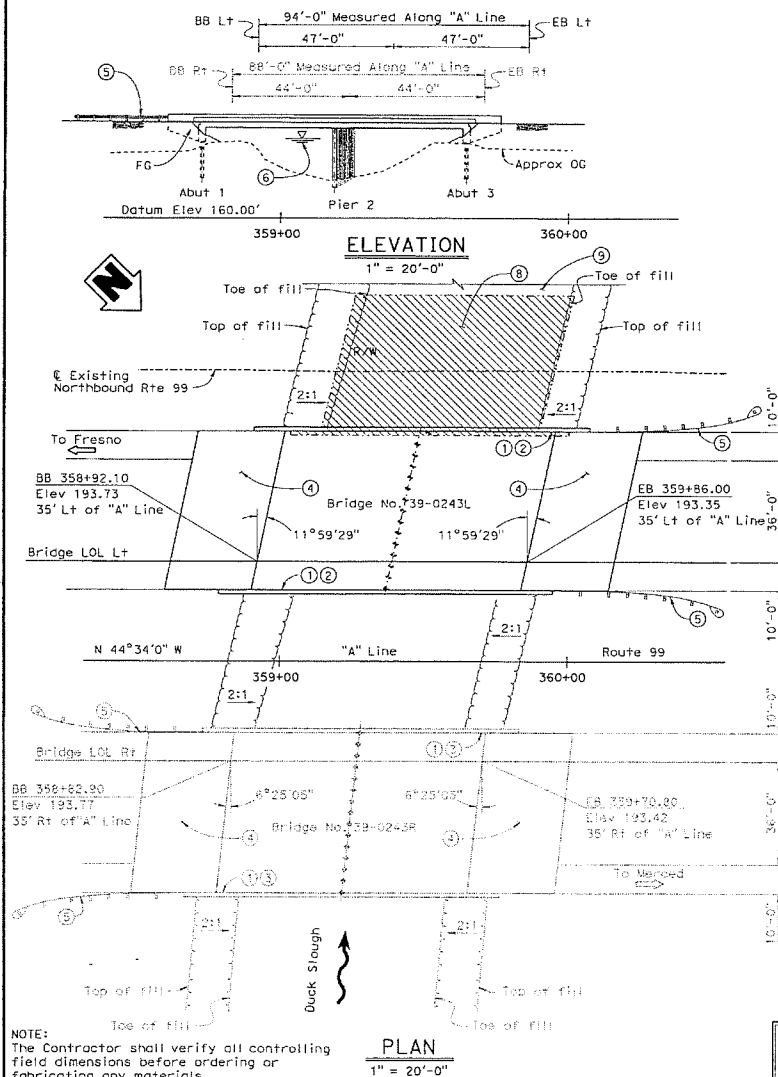
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Mer	99			

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

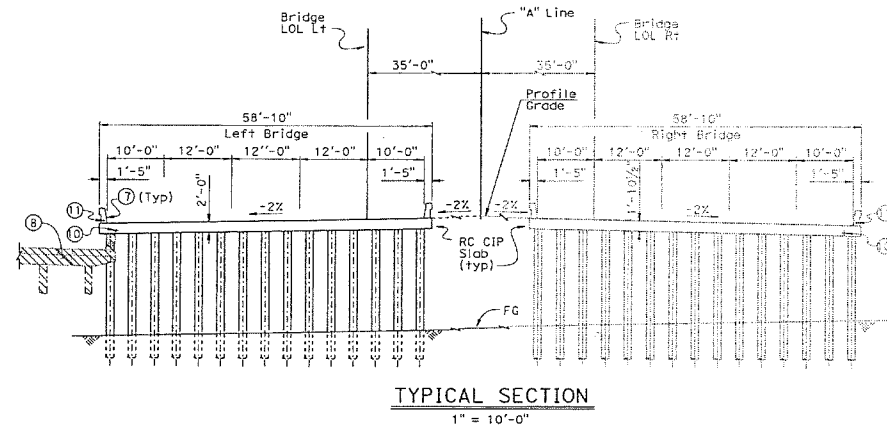
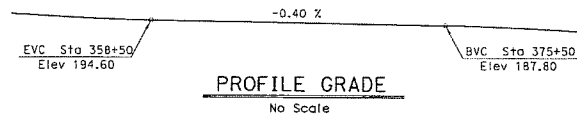
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
G. SONSTER
 No. C 63897
 Exp. 09-30-10
 CIVIL
 STATE OF CALIFORNIA



NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any materials.

PS & E



Legend:

- ① Paint "Duck Slough Bridge".
- ② Paint Bridge No. 390243L.
- ③ Paint Bridge No. 390243R.
- ④ Structure Approach Type N(300).
- ⑤ Metal Beam Guard Rail, see "Road Plan".
- ⑥ For Hydrologic Summary, see "Foundation Plan".
- ⑦ Concrete Barrier Type 732.
- ⑧ Partial removal of existing Bridge 39-0004, see "Partial Bridge Removal" sheet in Duck Slough Bridge West Frontage Road plan set.
- ⑨ Portion of existing bridge 39-0004 to remain as future West Frontage Road, see "Barrier Modifications" sheet in "Duck Slough Bridge West Frontage Road" plan set.
- ⑩ 4" Ø Communication Conduit for fiber optic in slab, see "Road Plans".
- ⑪ Place 2" Conduit in Barrier Rail, see "Road Plans".

▨ Indicate Partial bridge removal
 - - - - - Indicate existing structure

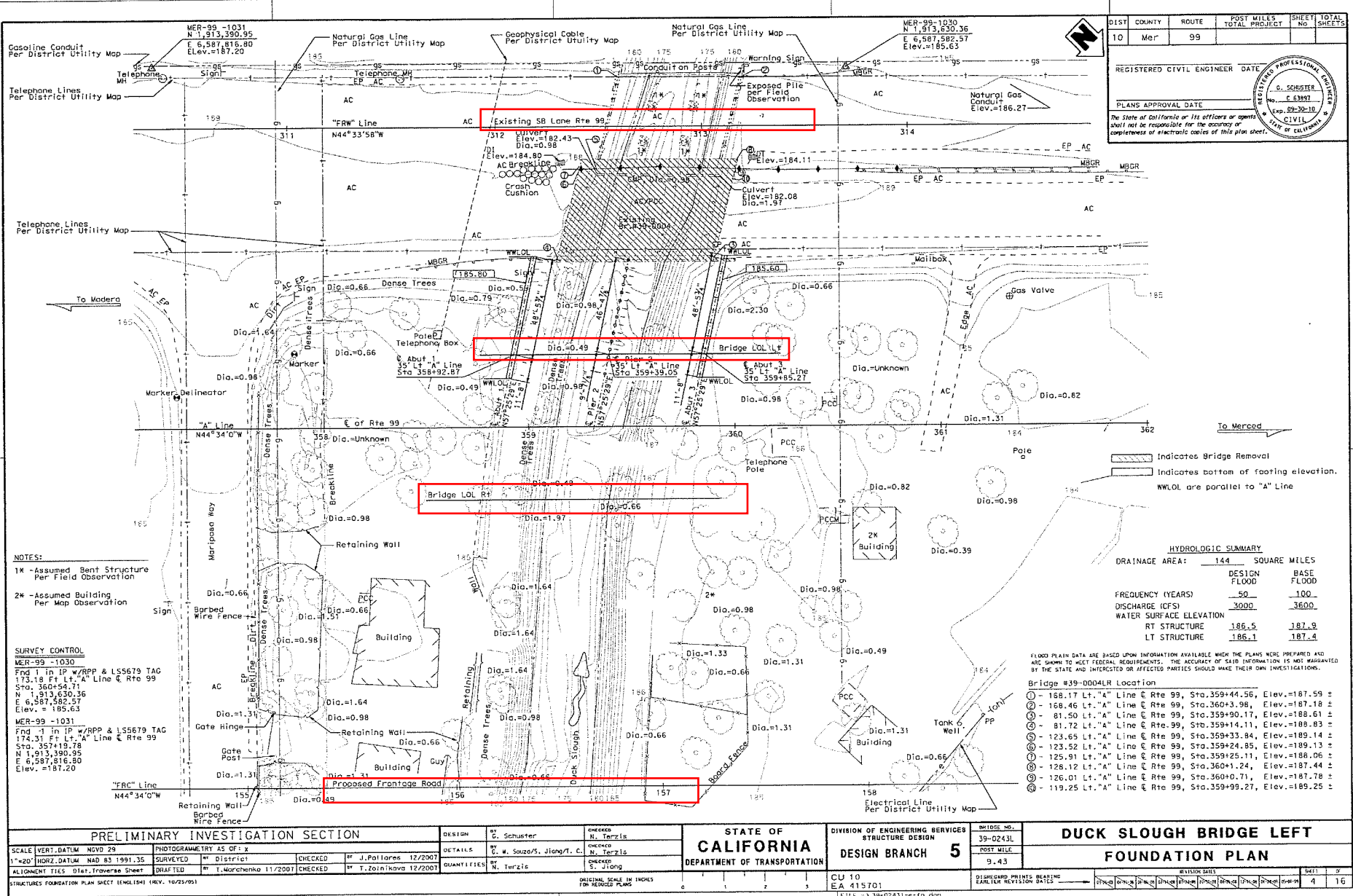
DESIGN ENGINEER	DESIGN	BY G. Schuster	CHECKED N. Terzis	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING	HL93 W/ "LOW-BODY" PERMIT DESIGN VEHICLE	BRIDGE NO.	DUCK SLOUGH BRIDGE LEFT	
	DETAILS	BY A.C. / G.S. / S.J. / T.C.	CHECKED N. Terzis	LAYOUT	BY G. Schuster	CHECKED N. Terzis	39-0243L	GENERAL PLAN	
	QUANTITIES	BY N. Terzis	CHECKED S. Jiang	SPECIFICATIONS			POST MILE	DESIGN BRANCH 5	
							9.43	CU 10 EA 415701	

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 07-24-06)

FILE => 39-0243L-a-go.dgn

DATE AND PRINTS BEARING EARLIER REVISION DATES

REVISION	DATE	BY	NO.
1			16



DIST	COUNTY	ROUTE	POST MILES	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Mer	99				

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

HYDROLOGIC SUMMARY			
DRAINAGE AREA:	144	SQUARE MILES	
DESIGN FLOOD	50	BASE FLOOD	100
FREQUENCY (YEARS)	50	DISCHARGE (CFS)	3000
WATER SURFACE ELEVATION	186.5	RT STRUCTURE	187.9
LT STRUCTURE	186.1		187.4

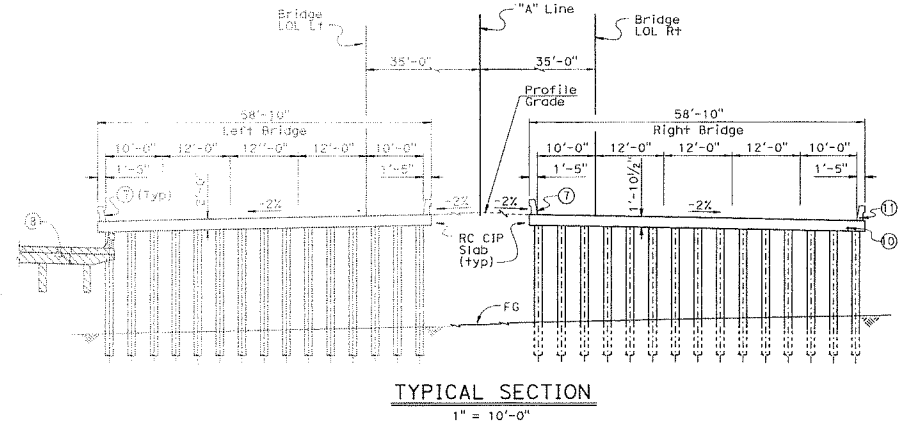
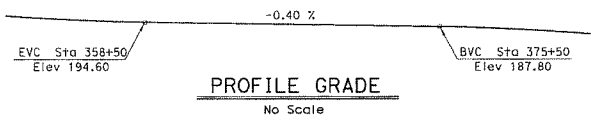
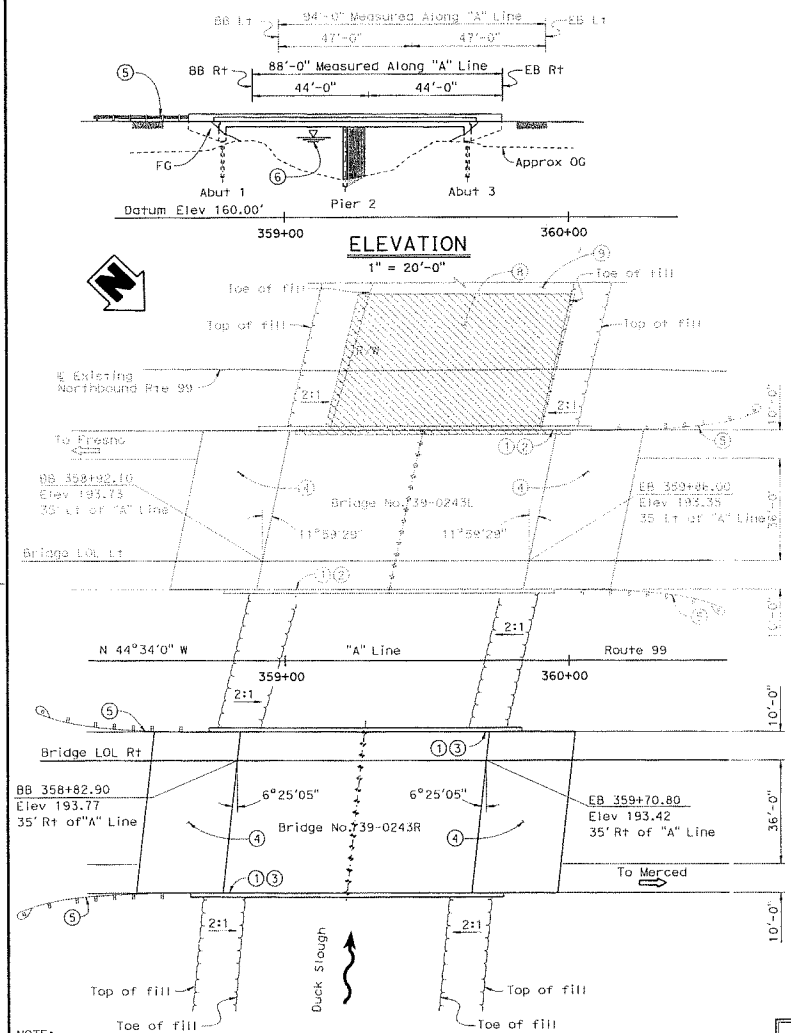
Bridge #39-0004LR Location		
①	- 188.17 Lt. "A" Line E Rte 99, Sta. 359+44.56, Elev. = 187.59 ±	
②	- 188.46 Lt. "A" Line E Rte 99, Sta. 360+3.98, Elev. = 187.18 ±	
③	- 81.50 Lt. "A" Line E Rte 99, Sta. 359+90.17, Elev. = 188.61 ±	
④	- 81.72 Lt. "A" Line E Rte 99, Sta. 359+14.11, Elev. = 188.83 ±	
⑤	- 123.65 Lt. "A" Line E Rte 99, Sta. 359+33.84, Elev. = 189.14 ±	
⑥	- 123.52 Lt. "A" Line E Rte 99, Sta. 359+24.85, Elev. = 189.13 ±	
⑦	- 125.91 Lt. "A" Line E Rte 99, Sta. 359+25.11, Elev. = 188.06 ±	
⑧	- 128.12 Lt. "A" Line E Rte 99, Sta. 360+1.24, Elev. = 187.44 ±	
⑨	- 126.01 Lt. "A" Line E Rte 99, Sta. 360+0.74, Elev. = 187.78 ±	
⑩	- 119.25 Lt. "A" Line E Rte 99, Sta. 359+99.27, Elev. = 189.25 ±	

PRELIMINARY INVESTIGATION SECTION										DESIGN		BY		CHECKED		DATE		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		STRUCTURE DESIGN		BRIDGE NO.		DUCK SLOUGH BRIDGE LEFT					
SCALE VERT. DATUM NGVD 29		PHOTOGRAMMETRY AS OF: x		SURVEYED		BY District		CHECKED		BY J. Pallares		12/2007		DETAILS		BY G. W. Souza/S. Jiang/T. C.		CHECKED		BY N. Terzis		12/2007		39-0243L		POST MILE					
1"=20' HORIZ. DATUM NAD 83 1991.35		ALIGNMENT FILES Dist. Traverse Sheet		DRAFTED		BY T. Marchenko		11/2007		CHECKED		BY T. Zolotareva		12/2007		QUANTITIES		BY N. Terzis		CHECKED		BY S. Jiang		9.43		FOUNDATION PLAN					
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/95)										ORIGINAL SCALE IN INCHES FOR REDUCED PLANS										CU 10		EA 415701		DISSEMINATED PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET 4		OF 16	

DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
10	Mer	99	TOTAL PROJECT	No	SHEETS

REGISTERED CIVIL ENGINEER DATE **G. SCHUSTER**
 No. **C 63897**
 Exp. **09-30-16**
 CIVIL
 STATE OF CALIFORNIA

PLANS APPROVAL DATE _____
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



- Legend:
- ① Paint "Duck Slough Bridge".
 - ② Paint Bridge No. 390243L.
 - ③ Paint Bridge No. 390243R.
 - ④ Structure Approach Type N(30D).
 - ⑤ Metal Beam Guard Rail, see "Road Plan".
 - ⑥ For Hydrologic Summary, see "Foundation Plan".
 - ⑦ Concrete Barrier Type 732.
 - ⑧ Partial removal of existing Bridge 39-0004, see "Partial Bridge Removal" sheet in Duck Slough Bridge West Frontage Road" plan set.
 - ⑨ Portion of existing bridge 39-0004 to remain as future West Frontage Road, see "Barrier Modifications" sheet in "Duck Slough Bridge West Frontage Road" plan set.
 - ⑩ 4" Ø Communication Conduit for fiber optic in slab, see "Road Plans".
 - ⑪ Place 2" Conduit in Barrier Rail, see "Road Plans".

Indicate Partial bridge removal
 --- Indicate existing structure

NOTE:
 The Contractor shall verify all controlling field dimensions before ordering or fabricating any materials.

PLAN
 1" = 20'-0"

PS & E

DESIGN	BY G. Schuster	CHECKED N. Terzis	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/LLWB-VI	PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN BRIDGE NO. 39-0243R POST MILE 9.43	DUCK SLOUGH BRIDGE RIGHT GENERAL PLAN
DETAILS	BY A.C. / G.S. / S.J. / T.C.	CHECKED N. Terzis	LAYOUT	BY G. Schuster	CHECKED N. Terzis			
QUANTITIES	BY N. Terzis	CHECKED S. Jiang	SPECIFICATIONS	BY	CHECKED			

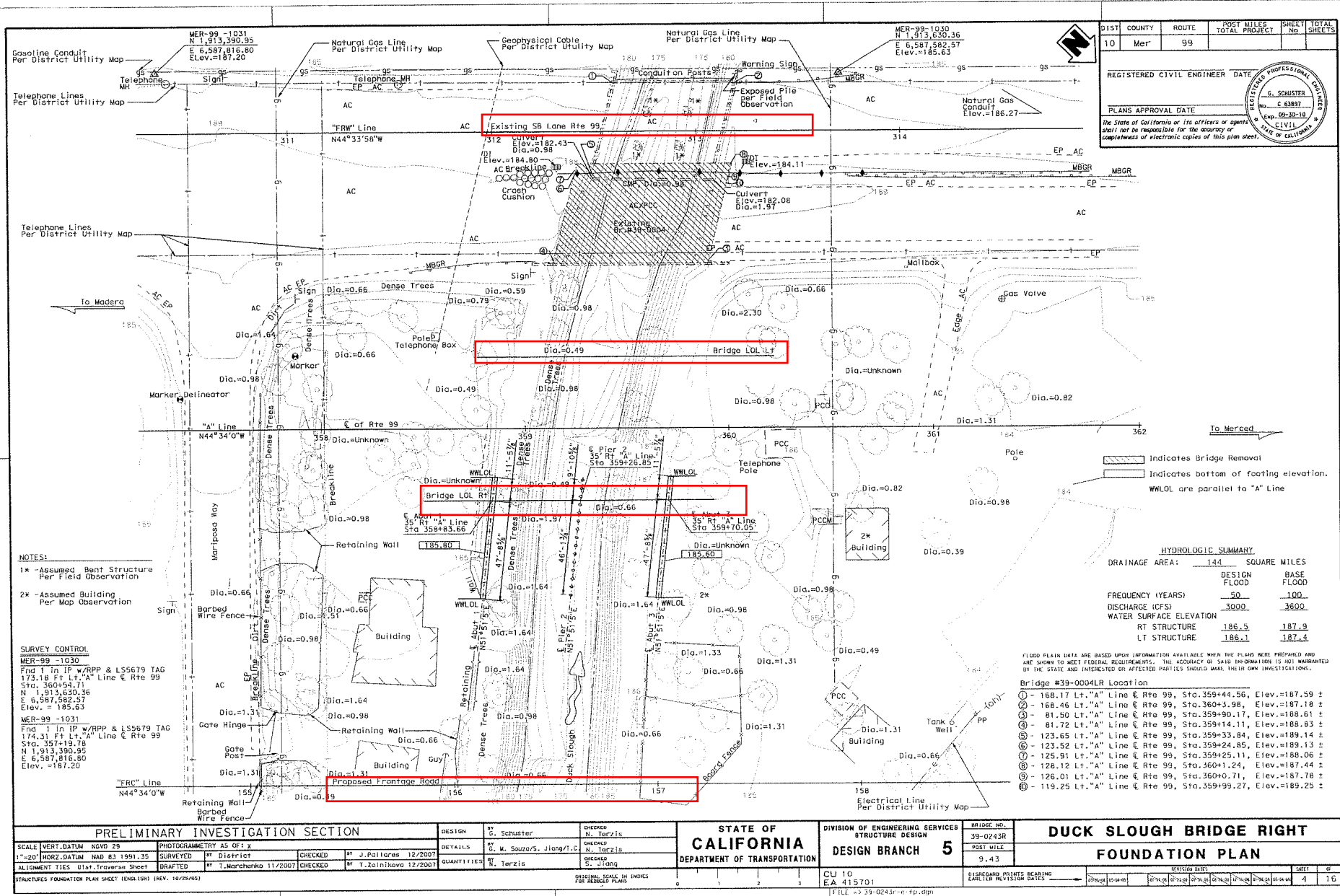
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 10
 EA 415701

DISCREPANCY PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

1 16



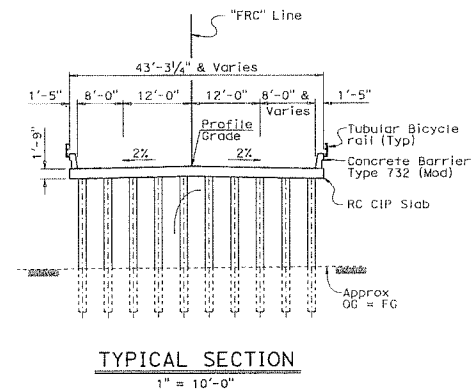
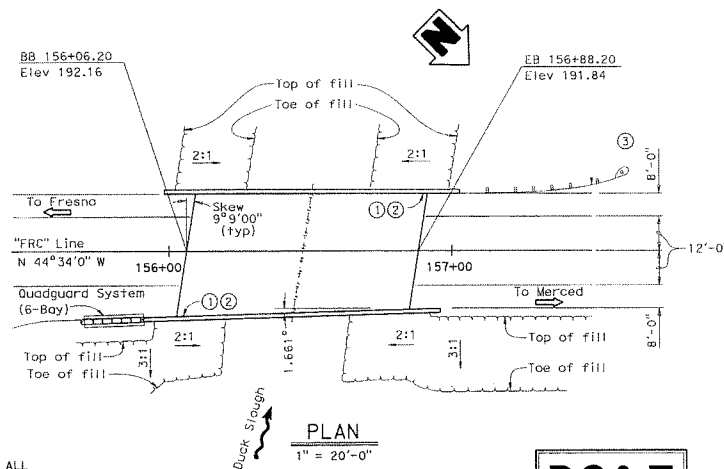
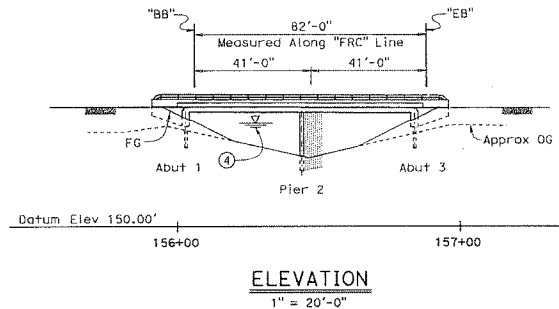
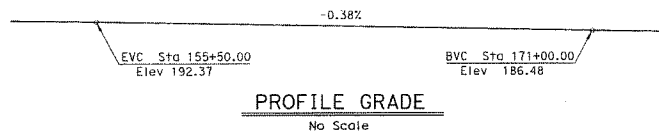
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO SHEETS
10	Mer	99		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
G. SCHUSTER
No. C 63897
Exp. 09-30-10
CIVIL
STATE OF CALIFORNIA



- Legend:
- ① Paint "Duck Slough Bridge".
 - ② Paint Bridge No. 3902435.
 - ③ Metal Beam Guard Rail, See "Road Plan".
 - ④ For Hydrologic Summary, See "Foundation Plan".

NOTE:
THE CONTRACTOR SHALL VERIFY ALL
CONTROLLING FIELD DIMENSIONS
BEFORE ORDERING OR FABRICATING
ANY MATERIAL.

PS&E

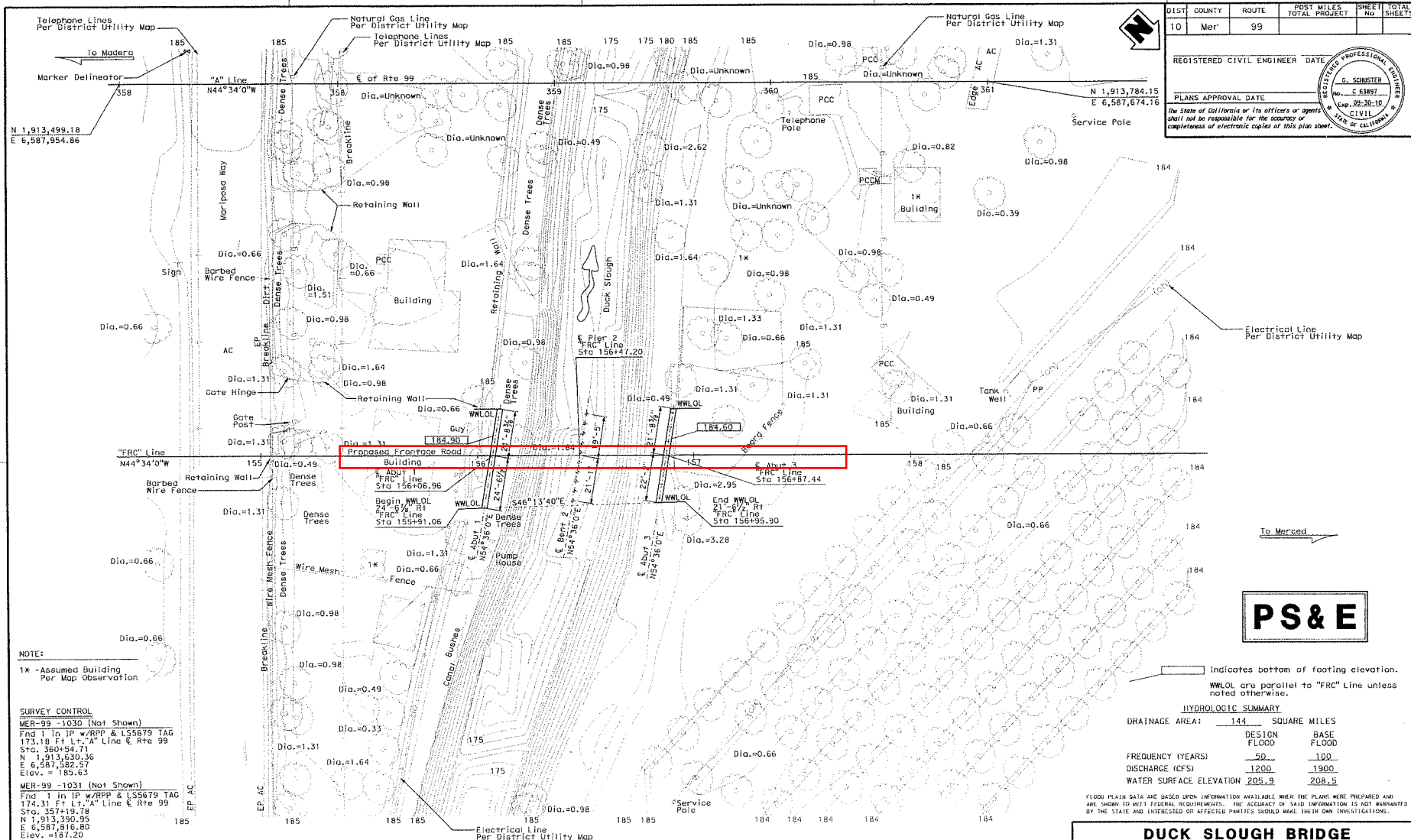
DESIGN	BY G. Schuster	CHECKED N. Terzis	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADS: HS 20 W/10K-BOV	PERMIT DESIGN VEHICLE
DETAILS	BY A. Chen/G. Souza/S. J	CHECKED N. Terzis	LAYOUT	BY G. Schuster	CHECKED N. Terzis
QUANTITIES	BY N. Terzis	CHECKED A. Chen	SPECIFICATIONS	BY	PLANS AND SPECS

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.
DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	3902435
DESIGN BRANCH 5	POST MILE	9.43

DUCK SLOUGH BRIDGE	
EAST FRONTAGE ROAD	
GENERAL PLAN	
CU 10	REVISION SHEET
EA 415701	DATE
FILE -> 39-02435-a-gp.dgn	DATE

STRUCTURES DESIGN GENERAL PLAN SHEET (ENCL 13M) (REV. 07-24-06)

DATE PLOTTED 07/15/06



DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
10	Mer	99	TOTAL PROJECT	NO	SHEETS

REGISTERED CIVIL ENGINEER DATE _____
 G. SCHUSTER
 No. C 63897
 Exp. 09-30-15
 CIVIL
 STATE OF CALIFORNIA

PLANS APPROVAL DATE _____
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

NOTE:
 1* - Assumed Building
 Per Map Observation

SURVEY CONTROL
 MER-99 - 1030 (Not Shown)
 Find 1 in IP w/RPP & L55679 TAG
 Sta. 360+94.71
 N 1,913,430.36
 E 6,587,582.57
 Elev. = 185.63

MER-99 - 1031 (Not Shown)
 Find 1 in IP w/RPP & L55679 TAG
 Sta. 357+19.78
 N 1,913,390.95
 E 6,587,816.80
 Elev. = 187.20

Indicates bottom of footing elevation.
 WWLOL are parallel to "FRC" Line unless noted otherwise.

HYDROLOGIC SUMMARY
 DRAINAGE AREA: 144 SQUARE MILES
 DESIGN FLOOD: 50
 BASE FLOOD: 100
 FREQUENCY (YEARS): 50
 DISCHARGE (CFS): 1200
 WATER SURFACE ELEVATION: 205.9
 208.5

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE STATE AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATIONS.

PRELIMINARY INVESTIGATION SECTION				STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.	
SCALE: VERT. DATUM NGVD 29				DESIGN BY G. Schuster		STRUCTURE DESIGN		39C0375	
1"=20' HORIZ. DATUM NAD 83 1991.35				CHECKED N. Terzis		POST MILE		9.43	
ALIGNMENT TIES Dist. traverse sheet				DETAILS G. M. Souza/S. Jiang		DESIGN BRANCH 5			
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05)				QUANTITIES BY N. Terzis		CU 10		DISSEMINATION PRINTS BEARING EARLIER REVISION DATES	
				ORIGINAL SCALE 1/8"=1'-0" FOR REDUCED PLANS		EA 415701		REVISION DATES	
						FILE # 39-02430-e-fp.dgn		SHEET 4 OF 15	

PS&E

DUCK SLOUGH BRIDGE
EAST FRONTAGE ROAD
FOUNDATION PLAN

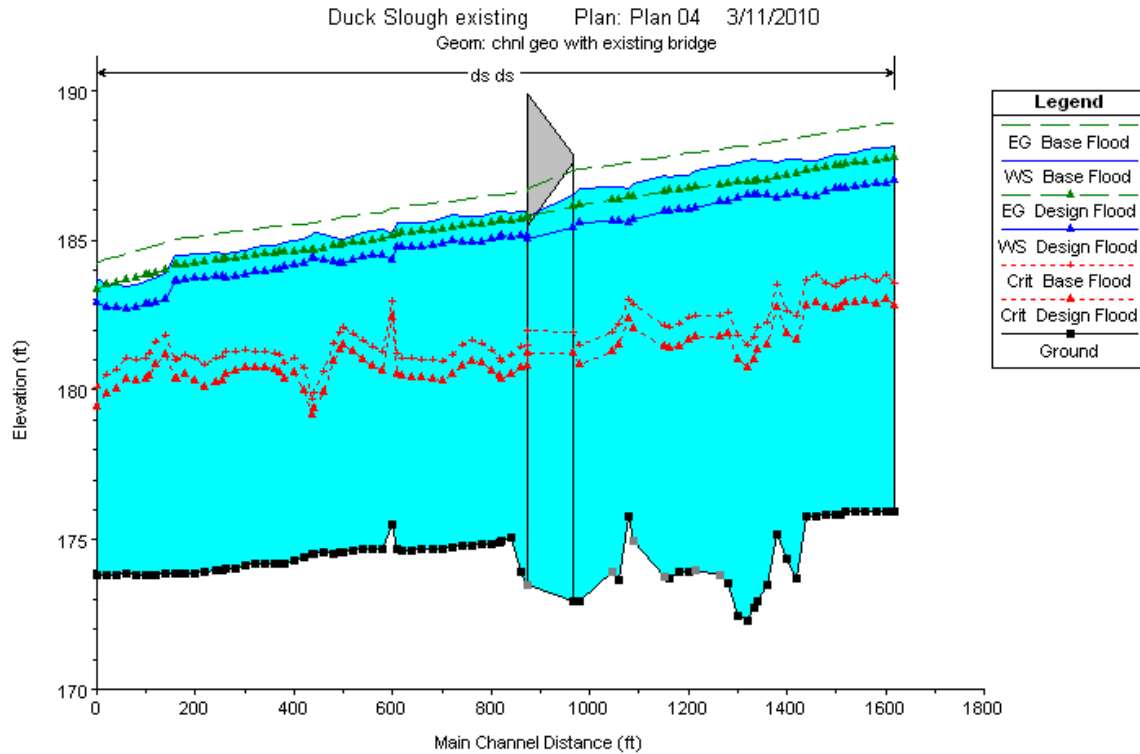


Figure 1: Stream Profile for the existing Route 99 structure at Duck Slough.

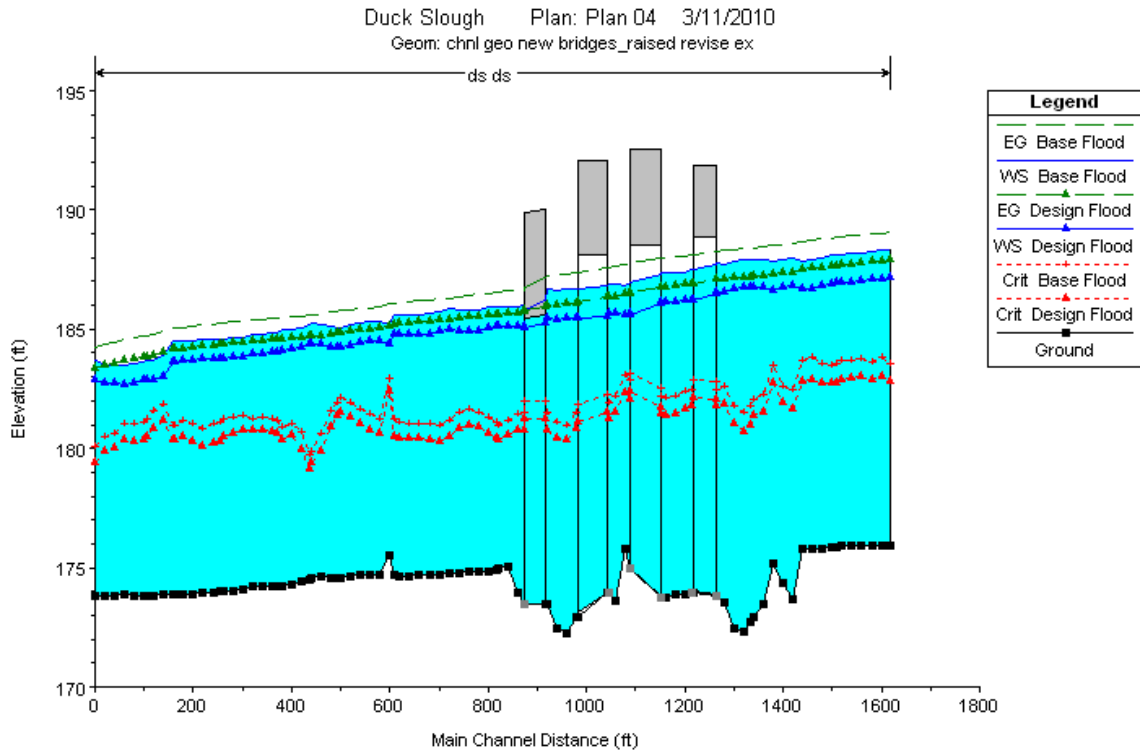


Figure 2: Stream Profile for the proposed Route 99 project at Duck Slough.